APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/819,395	03/28/2001	Takashi Kaku	FUJZ 18.525	7108

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EXAMINER
AHN, SAM K

ART UNIT	PAPER NUMBER
2637	

DATE MAILED: 01/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/819,395	KAKU ET AL.
	Examiner	Art Unit	
	Sam K. Ahn	2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 October 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-12 and 14-27* is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-6,12,14-18,24,26 and 27* is/are rejected.

7)☒ Claim(s) *7-11,19-23 and 25* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☒ All b)☐ Some * c)☐ None of:

         1.☒ Certified copies of the priority documents have been received.

         2.☐ Certified copies of the priority documents have been received in Application No. _____.

         3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
     Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
     Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 10/18/05 have been fully considered but they are not persuasive.

On page 3, applicants argue that Carneheim does not teach extracting the bit sequence based on established synchronization. The examiner respectfully disagrees. As previously explained, Carneheim teaches extracting the bit sequence based on established synchronization (400 in Fig.4). In order for any receiver to properly receive a signal, an initial synchronization must be performed prior any further processing, in this case, extracting the bit sequence. Hence, for the receiver of Carneheim to receive the data frames (400 in Fig.4), initial synchronization must have been performed prior to the reception of the frames. Jeong et al. USP 6,229,859 B1 (Jeong) supports this argument. Jeong teaches initial synchronization (108 in Fig.1 by implementing a phase locked loop to synchronize the incoming signal to an internally generated clock, which is well-known to one skilled in the art) prior to receiving and aligning frames (110 in Fig.10). Thus, in order to receive the data frames (400 in Fig.4 of Carneheim) initial synchronization have been performed.

The examiner interprets "zero-points" as signal containing zeroes. On page 3, applicants further argue that the applicants use of zero-points provide an advantage by citing page 7 of the specification. In response to applicant's argument that the references fail to show certain features of applicant's invention,

it is noted that the features upon which applicant relies (i.e., advantage of zero-

point is at which only noise components on a received signal remain) are not

recited in the rejected claim(s). Although the claims are interpreted in light of the

specification, limitations from the specification are not read into the claims. See

In re Van Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

In response to applicant's argument on page 3 that the examiner's

conclusion of obviousness is based upon improper hindsight reasoning, it must

be recognized that any judgment on obviousness is in a sense necessarily a

reconstruction based upon hindsight reasoning. But so long as it takes into

account only knowledge which was within the level of ordinary skill at the time the

claimed invention was made, and does not include knowledge gleaned only from

the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*,

443 F.2d 1392, 170 USPQ 209 (CCPA 1971). In this case, the examiner relied

on the teaching of Carneheim for the limitation of establishing synchronization

based on a received signal and extracting the bit sequence based on the

established synchronization. Since both Rudolph and Carneheim teaches

inserting pseudo random sequences in the signals generated by the transmitter

(66 in Fig.1a of Rudolph and 155 in Fig.1 of Carneheim) it is also necessary to

perform the reverse task and extracting the bit sequence, wherein the examiner

relies on Carneheim for the missing limitation of extracting.

On page 4, applicants further argue that Rudolph in view of Carneheim do

not teach the amended limitation of "interpolating a noise component of the

received signal by using the zero-point". Rudolph teaches interpolating a noise

component of the received signal (note col.3, lines 4-9 and col.4, lines 9-28) by

using the zero-point by using the zero-point (84 in Fig.1b also having the

sequence illustrated in Fig.2b). Thus, Rudolph in view of Carneheim teach all the

subject matter claimed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 2-6,12,14-18,24,26 and 27 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Rudolph et al. U.S. Pat. No. 6,501,804 B1 (Rudolph, cited

previously) in view of Carneheim et al. USP 6,215,798 B1 (Carneheim).

Regarding claims 2,14,26 and 27, Rudolph discloses a noise canceling method

and apparatus (see Fig.1a and 1b) comprising, interpolating a noise component

of the received signal (note col.3, lines 4-9 and col.4, lines 9-28) by using the

zero-point (84 in Fig.1b also having the sequence illustrated in Fig.2b), and

means for canceling or subtracting the noise component from the received signal

(see 88 in Fig.1b and note col.4, lines 58-62).

Although Rudolph teaches inserting a sequence of bits into a signal on a transmission side, Rudolph does not teach extracting the zero-point based on the established synchronization.

Carneheim teaches periodically inserting synchronization bits into signal (synchronization bit, 310 in Fig.3) on a transmission side, establishing synchronization based on a received signal (400 in Fig.4), extracting the bit (410 in Fig.4) based on the established synchronization. Carneheim teaches periodically inserting synchronization bits into the signal (310 in Fig.3, zeroes are also used for synchronization, note col.1, lines 59-61, wherein the zeroes are used to implement transmitting data in parallel channels, 140 in Fig.1, in order to divide the signal into plurality of frames), and extracting the bits (410 in Fig.4). The examiner interprets zero-points as signal containing zeroes, which Carneheim and Rudolph teaches.

Therefore, it would have been obvious to one skilled in the art at the time of the invention to incorporate the teaching of Carneheim in the system of Rudolph by applying synchronization bits (310 in Fig.3) in the transmitter (66 in Fig.1a) of Rudolph for the purpose of generating parallel channels of data, thus increase data rate. Hence, the receiver extracts the zeroes in order to reconstruct the data in the parallel channels.

Furthermore, it would have been obvious to one skilled in the art at the time of the invention to incorporate the teaching of Carneheim in the system of Rudolph by transmitting the synchronization bits of Carneheim on the transmission side

for the purpose of properly aligning the received signal or establishing

synchronization, as taught by Carneheim (note col.2, lines 26-31). In order for

any receiver to properly receive a signal, an initial synchronization must be

performed prior any further processing, in this case, extracting the bit sequence.

Hence, for the receiver of Carneheim to receive the data frames (400 in Fig.4)

and further extract the bit sequence, initial synchronization must have been

performed prior to the reception of the frames.

Jeong et al. USP 6,229,859 B1 (Jeong) supports this argument. Jeong teaches

initial synchronization (108 in Fig.1 by implementing a phase locked loop to

synchronize the incoming signal to an internally generated clock, which is well-

known to one skilled in the art) prior to receiving and aligning frames (110 in

Fig.10). Thus, in order to receive the data frames (400 in Fig.4 of Carneheim)

initial synchronization has been performed.

Regarding claims 3 and 15, Rudolph in view of Carneheim teach all subject

matter claimed, as applied to claim 2 or 14. Rudolph further teaches wherein

one or more zero-points are inserted at intervals of an integer number of

samples. (see Fig.2b wherein the test sequences are inserted at interval of one

data block)

Regarding claims 4 and 16, Rudolph in view of Carneheim teach all subject

matter claimed, as applied to claims 3 or 15. Rudolph further teaches wherein

the test sequences are variable, since data block may be replaced by a gap

when greater periodic interval is used, (note col.2, lines 43-65). And although

Rudolph does not teach wherein the variable test sequences interval is

determined by the signal quality, it would have been obvious to one skilled in the

art at the time of the invention to increase and decrease the number of test

sequences being transmitted to the receiver depending on the signal quality as

the purpose of test sequences are to eliminate noise. Therefore, during heavy

noise in the signal received, frequent test sequences may be transmitted. And

furthermore, since the transmitter is not aware of the signal quality received by

the receiver, the receiver sending the information to the transmitter in regards to

the signal quality is well-known in the art. Therefore, it would have been obvious

to one skilled in the art at the time of the invention to inform the signal quality

received to the transmitter for the purpose of adjusting the frequency of test

sequences to be transmitted.

Regarding claims 5 and 17, Rudolph in view of Carneheim teach all subject

matter claimed, as applied to claims 2 or 14. Rudolph further teaches

implementation of the noise canceling system in a digital broadcasting

environment using AM bands. (note col.1, lines 6-10) And therefore, it is inherent

that the system of Rudolph is implemented in a wireless environment having a

transparent transmission line transceiving using AM bands.

Regarding claims 6 and 18, Rudolph in view of Carneheim teach all subject matter claimed, as applied to claims 5 or 17. And although Rudolph does not teach wherein the transparent transmission line comprises a Nyquist transmission line, it would have been obvious to one skilled in the art at the time of the invention to design a system having a Nyquist transmission line for the purpose of supporting a well-known Nyquist theorem.

Regarding claims 12 and 24, Rudolph in view of Carneheim teach all subject matter claimed, as applied to claims 2 or 14. Rudolph further teaches wherein an automatic equalizer (note col.3, lines 10-13 eliminating the noise from the received signal) may be provided at a former or latter stage of a noise cancellation, wherein the equalizer is well-known in the art to be used as a function to remove intersymbol interference.

Allowable Subject Matter

3. Claims 7-11, 19-23 and 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, and overcome the claim objections.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to

   applicant's disclosure.

   Jeong et al. USP 6,229,859 B1 teach initial synchronization prior to proper

   reception and alignment of frames in the signal received.

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

   policy as set forth in 37 CFR 1.136(a).

   A shortened statutory period for reply to this final action is set to expire

   THREE MONTHS from the mailing date of this action. In the event a first reply is

   filed within TWO MONTHS of the mailing date of this final action and the advisory

   action is not mailed until after the end of the THREE-MONTH shortened statutory

   period, then the shortened statutory period will expire on the date the advisory action

   is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from

   the mailing date of the advisory action. In no event, however, will the statutory

   period for reply expire later than SIX MONTHS from the mailing date of this final

   action.

   Any inquiry concerning this communication or earlier communications from
the examiner should be directed to Sam Ahn whose telephone number is (571)
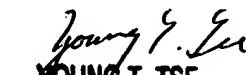272-3044. The examiner can normally be reached on Monday-Friday.
   If attempts to reach the examiner by telephone are unsuccessful, the
examiner's supervisor, Jay Patel can be reached on (571) 272-2988. The fax
phone number for the organization where this application or proceeding is
assigned is 571-273-8300.
   Information regarding the status of an application may be obtained from
the Patent Application Information Retrieval (PAIR) system. Status information
for published applications may be obtained from either Private PAIR or Public

PAIR. Status information for unpublished applications is available through
Private PAIR only. For more information about the PAIR system, see http://pair-
direct.uspto.gov. Should you have questions on access to the Private PAIR
system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-
free).

Sam K. Ahn
1/3/06

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PRIMARY EXAMINER